

REMARKS

The office action mailed on April 8, 2004 has been carefully considered and the Examiner's remarks are appreciated. In response to the Examiner's suggestion that the December 8, 2003 reply was not fully responsive to the June 6, 2003 office action, Applicants respectfully submit the following remarks particularly addressing each of the points raised by the Examiner in the June 6, 2003 and April 8, 2004 office actions.

Claims 1-80 were subject to restriction requirement in a previous office action (January 13, 2003), and Applicants elected claims 17-29 and 54-67, with traverse. Claims 17, 19, 20, 22, 23, 56, 58, 59, and 64 have been amended, and claims 28 and 29 have been canceled. Therefore claims 17-27, and 54-67 are presented for examination, with support for the amendments found in the Specification, Claims, and Drawings. In response to the Office Action, Applicants respectfully request reconsideration in view of the above amendments and the following remarks.

Discussion of the Office Action

In the April Office Action, the Examiner rejected claims 17-27 and 54-67 under 35 U.S.C. 112, first and second paragraphs. And the Examiner also rejected claims 17-27 and 54-67 under 35 U.S.C. §103(a).

Statement Concerning Common Ownership for purposes of 103(c)

The present application serial number 10/032,758, and U.S. Pat. No. 5,505,799 and U.S. Pat. No. 5,773,748 and U.S. Pat. No. 5,490,911 were, at the time the invention of

application 10/032,758 was made, owned by, or subject to an obligation of assignment to, The Regents of the University of California.

Discussion of Rejections under 35 USC §112, second paragraph

Claims 17-27 and 54-67 were rejected under. under 35 U.S.C. §112, second paragraph, as being indefinite for failing to point out and distinctly claim the subject matter which is the invention. In support of this rejection, the Examiner incorporated by reference the reasons set forth in parent application S/N 08/998,370 (hereinafter "'370 application") for the rejections therein which the Examiner asserted were affirmed by the Board of Appeals.

Notwithstanding the Examiner's assertion to the contrary, it is respectfully submitted that the Board of Appeals decision in the '370 application has clearly recognized the term "limited life" as being not indefinite. Rejecting the Examiner's reasons, the Board stated, *"While the claim recitation may be very broad, in our view it is not indefinite, for one of ordinary skill in the art would understand what is meant."* And with regard to claim 58, Applicants have removed the "etc." term which the Examiner also stated was indefinite.

Discussion of Rejections under 35 USC §112, first paragraph

Claims 17-27 and 54-67 were also rejected under 35 U.S.C. §112, first paragraph, as failing to comply with the written description requirement with regard to "limited life" in the disclosure. Here too, the Examiner asserted that the term "limited life" is unclear, and that the metes and bounds of the invention cannot be reasonably determined. In support of

this rationale the Examiner cited and incorporated by reference the reasons set forth in the '370 Board of Appeals decision affirming the §112 first paragraph rejections only. It is notable however, that the Board of Appeals recharacterized the point of issue as the "enabling" requirement, and not the "description" requirement as asserted by the Examiner.

In the '370 appellate decision, the Board stated as follows,

"...lacking are instructions regarding such basic and important details as which of the selections of inorganic material would be appropriate for a particular application, how thick the layers should be, and how many layers should be constructed in order for the interdiffusion to cause the inactive state to be reached at the end of the desired time period, and whether, what, where, and how much of any additional element(s) should be utilized in order to offset such factors as very low or very high temperatures. In other words, one of ordinary skill in the art is left to his or her own devices to figure out how to perform the appellant's process to achieve a desired end."

It is respectfully submitted, however, that the aforementioned reasons suggest that the Board of Appeals did not adequately consider legal precedents in determining the sufficiency of enablement for compliance with 35 U.S.C. §112, first paragraph. In particular, the Court of Appeals for the Federal Circuit stated in National Recovery Techs, Inc. v. Magnetic Separation Syst., Inc., 49 USPQ 2d 1671, 1675-76 (Fed. Cir. 1999),

"the scope of the claims must bear a reasonable correlation to the scope of enablement provided by the specification to persons of ordinary skill in the art."

And in Fiers v. Revel 25 USPQ 2d 1601, 1607 (Fed. Cir. 1993), the CAFC also stated.

"[A] specification disclosure which contains a teaching of the manner and process of making and using the invention in terms which correspond in scope to those used in describing and

defining the subject matter sought to be patented must be taken in as in compliance with the enabling requirement of the first paragraph of §112 unless there is reason to doubt the objective truth of the statement contained therein which must be relied on for enabling support."

Furthermore, in Staehelein v. Secher, 24 USPQ 2d 1513, 1516 (B.P.A.I. 1992), the Board of Appeals stated,

"... the law does not require a specification to be a blueprint in order to satisfy the requirement for enablement under 35 USC 112, first paragraph."

It is respectfully submitted that the basic relationship between material selection, material arrangement (e.g. structure and layer thickness), and desired shelf life necessary to practice the basic invention (the independent claims) without undue experimentation is found throughout the application. While, no exact formula to achieve a particular desired end (e.g. disablement after X number of months or years) is provided, it is clear that such a determination is "predetermined" and thus predictable based on the known time-dependent interdiffusion characteristics of selected known material pairs having known thickness. For example, the Abstract contains the language,

"The sensitivity of an RML is determined by the physical structure and the stored interfacial energy. The sensitivity lowers with time due to a decrease in interfacial energy resulting from interdiffusion of the elemental layers. Time-dependent interdiffusion is predictable, thereby enabling the functional lifetime of an RML primer to be predetermined by the initial thickness and materials selected of the reacting layers."

Thus, it is respectfully submitted that a detailed list of combinations in order to produce a desired result is not required to meet the requirements of enablement under 112 paragraph

1. This principle is stated in Cedarapids, Inc. v. Nordberg, Inc Civ. App. 95-1529, slip op. 5-6 (Fed. Cir. Aug. 11, 1997) as follows,

"While it may require experimentation to arrive at the optimum level of the simultaneous increases for various size crushers, we have never held that a patent must disclose information sufficient to manufacture a commercial product incorporating the invention."

Also in National Recovery Techs, Inc. v. Magnetic Separation Sys. Inc., 49 USPQ 2d 1671, 1676 (Fed. Cir. 1999), the CAFC stated,

"There mere fact that the system has some drawbacks or that under certain postulated conditions it may not work... does not detract from the operability of the disclosed equipment to perform its described function."

Thus, it is respectfully submitted that the broad claims were written to be commensurate with the broad scope enabled by the description so as to achieve a predetermined result, not limited to a particular combination or range. However, in order to clarify the scope of the invention (as defined by the claims) commensurate with the enablement provided in the disclosure, Applicants have amended the claims, including independent claims 17 and 64. Thus amended claims 17 and 64 each further details the specific steps necessary to enable one of ordinary skill in the art to make and use the invention without undue experimentation. In particular, the claim 17 now includes the limitation: *"selecting at least two materials of the inorganic reactive material, of a type characterized by time-dependent interdiffusion of elements therebetween which reduces stored energy and reactivity in a metastable reactive interface thereof without producing a passivation layer."* Moreover, once the materials for the inorganic reactive material are selected, claim 17 further requires, *"contacting said at*

least two materials with each other in an arrangement adapted to achieve a desired limited-time based on said known time-dependent interdiffusion characteristics of the selected at least two materials...”

As described in the description, formation of the limited-time cartridge primers is hinged upon the selection of the appropriate materials having the requisite interactive characteristics, and the arrangement of the materials which is itself dependent on the known characteristics of the selection. And amended claim 64 has similar limitations to that of amended claim 17. Thus, it is respectfully submitted that the 112 first paragraph rejections are no longer applicable to claims 17-27 and 54-67, as amended.

Discussion of Rejections under 35 USC §103(a)

The Examiner also rejected claims 17-27 and 54-67 under 35 USC §103(a) as unpatentable over U.S. Pat. No. 5,717,159 to Dixon et al (hereinafter “Dixon”), in view of U.S. Pat. No. 5,606,146 to Danen et al (hereinafter “Danen”). In support of his rejections, the Examiner stated that Dixon teaches preparing a primer that contains MIC (metastable interstitial composite) of Danen, and that *“it is further obvious the “metastable” explosive must inherently have a limited life”* (emphasis added). It is respectfully submitted, however, that the Examiner has failed to make a prima facie case of obviousness, as required by MPEP §2143.03 as follows in part:

“To establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art”

Neither Dixon or Danen, together or independently, teach or suggest all the claim limitations of the present invention, as originally filed, e.g. in original independent claim 17. Danen in particular describes in detail MIC's of a type having a buffer layer located, in all cases, between two reactive layers, such as Al and CuO. The "buffer layer" is described in column 3 lines 25-33 of Danen, as being formed due to a reaction between Al and CuO. It is appreciated that this buffer reaction is a passivation reaction between two reactive materials, where "passivation" is described in, for example, the "Electrochemistry Dictionary" website (<http://electrochem.cwru.edu/ed/dict.htm>) as: *"The formation of a thin adherent film or layer on the surface of a metal or mineral that acts as a protective coating to protect the underlying surface from further chemical reaction..."* (emphasis added). In contrast, original claim 1 included the limitation, *"forming an explosive from a quantity of inorganic reactive material having time-dependent interdiffusion of elements which reduces stored energy and reactivity thereby producing a limited-life of the explosive."* The passivation reaction to produce the buffer layer in Dannen cannot reasonably be construed as a time-dependent interdiffusion, especially considering the relative long time periods (days, months, years) contemplated in the present invention.

In any case, Applicants have amended independent claims 1 and 64 to clarify the distinctions with the prior art, especially Dannen, by including the language, *"selecting at least two materials for said inorganic reactive material, said at least two materials of a type characterized by time-dependent interdiffusion of elements therebetween which reduces stored energy and reactivity in a metastable reactive interface thereof without producing a passivation layer"* (emphasis added), among others. Thus, in the present invention, while stored energy and

reactivity is reduced over time by inter-diffusion of elements, it is not the same or similar chemical reaction taking place in a passivation reaction. This difference can also be realized in the choice of reactive materials selected in Danen, compared to the present application. The preferred example discussed in Danen utilizes Al and CuO in layered relation which produces the buffered layer. In the present invention, Al and CuO are also described in the three layer multilayer structure, in the form of a Al-C-CuO layered arrangement. The carbon is interpositioned between the Al and CuO to prevent unwanted passivation reaction from occurring, (described on page 13, paragraph 44 with respect to Ti-C-CuO multilayer). Because of this distinction, it is respectfully submitted that the Examiner's conclusion that the use of a metastable explosive inherently yields the limited-life cartridge of the present invention, is incorrect.

Furthermore, the Examiner also rejected claims 17-27 and 54-67 under 35 USC §103(a) as unpatentable over Makowiedki et al. '911 and '748 and Makowiecki '799. It is respectfully submitted pursuant to the aforementioned 112 paragraph 1 discussion, that the benefit of the priority claim in the present application is valid, and therefore 102(b) is inapplicable. Furthermore, and contrary to the Examiner's assertion to the contrary, it is submitted that under 35 USC 102(e), the 103(c) provisions are available to the Applicants with the following statement.

Statement Concerning Common Ownership for 103(c)

The present application serial number 10/032,758 and U.S. Pat. No. 5,505,799 and U.S. Pat. No. 5,773,748 and U.S. Pat. No. 5,773,748 were, at the time the invention of

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Summary

Having amended the claims and/or overcome Examiner's rejections as discussed above, Applicant respectfully submits that claims 17-27 and 54-67 are in condition for allowance. Applicants respectfully request allowance of claims 17-27 and 54-67.

In the event that the Examiner finds any remaining impediment to the prompt allowance of these claims that could be clarified with a telephone conference, he is respectfully requested to initiate the same with the undersigned at (925) 422-7274.

Respectfully submitted,



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